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Steel Studs Win Converts

High lumber prices, poor quality spell "golden opportunity" for steel

by Don Best

Unhappy with the high price and deteriorating quality of lumber, a small but growing number of home builders are switching to steel framing. While all of these mavericks combined probably built fewer than 6,000 steel-framed homes last year (less than half of one percent of the total), they may represent the vanguard of a much larger army to come.

"We're getting a tremendous number of calls from builders asking questions about steel-frame construction," says Larry Zarke, marketing director at the National Association of Home Builders' Research Center. "It's definitely showing up on the builder's radar screen now as a workable alternative."

At least twice before — once in the early '70s and again in the late '80s — it appeared that steel framing was poised to break into the home building industry in a big way.

"It was the relatively high cost of steel and builders' reluctance to change that held it back," explains Richard Haws, program manager for cold-formed steel construction at the American Iron and

Steel Institute (AISI). "But the world has changed. Today, the price of a steel-framed house is comparable, or in some cases less, than its wood equivalent. And the quality of steel has gotten better over the past ten years while the quality of lumber has [deteriorated]."

Many of the builders who are turning to steel framing for residential projects got started in commercial work, where steel has been a standard for years. Thus they're already familiar with the tools and techniques that steel requires.

Other builders, like Paul Gardner of the Archer Group, in Victor, N.Y., are approaching steel more cautiously, using it for interior, non-loadbearing partitions but not for structural framing. (For framing techniques see "Steel-Stud Partitions," 3/91.)

"The difference in prices is pretty substantial right now," Gardner notes. "I'm paying \$3.20 for an 8-foot 2x4 while a light-gauge steel stud of the same dimensions (non-loadbearing) costs me just \$2."

No one knows whether that hefty price differential will hold in the future. Some

observers believe that the steady depletion of old-growth timber and increasing environmental pressures will send lumber prices even higher in the years ahead. Others claim that supplies are adequate and that timber suppliers still have the flexibility to cut prices if they perceive that steel is becoming a genuine threat.

Beyond any temporary or even permanent price advantage, steel's strongest appeal is probably its consistent quality and dimensional stability.

"Steel partitions stay straight and plumb forever," notes Gardner. "There are no knots and no warping, so you don't have the drywall buck-

continued



Steel framing got a vote of confidence when NAHB recently chose metal studs for its Resource Conservation House in Bowie, Md. How steel compares environmentally to wood is still hotly debated.

STATE BY STATE

Maine Small contractors could get a big break on their insurance bills if Maine legislators pass a pending law that would allow businesses with ten or fewer employees to carry medical payment insurance and employers' liability rather than traditional workers comp insurance.

Connecticut Remodelers in the state were hoping to see the state kill a year-and-a-half-old law that subjects most home repair work such as painting, roofing, and wall papering to the state's sales and use tax. According to contractors, compliance with the law has been spotty due to its paperwork and accounting burden. At press time, the proposal to kill the law was not expected to pass in this year's legislative session.

New York A new law protects consumer and environmental groups from retaliatory "SLAPP" lawsuits from developers and government agencies. SLAPPS, or "strategic lawsuits against public participation," have increasingly been used by developers, government agencies, or companies such as waste incineration outfits to discourage public opposition to planned projects. The controversial suits are filed against individuals or groups that raise objections to projects, and usually seek to recover legal costs and sometimes lost profits. The New York law prohibits such SLAPP suits unless the plaintiff can prove the civic group's objections were malicious or libelous.

Vermont A workers comp reform bill before the state legislature would limit medical bills to "reasonable and customary charges," limit attorney's fees to \$3000, and increase penalties for fraud. Although the state's comp benefits are among the highest in the country, the task force appointed to study the workers comp program recently reported that it was not in the "full-blown crisis that exists in other New England states." □

EPA Recommends Radon Protection in New Homes

In a recent ruling, the Environmental Protection Agency (EPA) called on builders to install radon protection measures in all new houses in high-risk areas. The voluntary guidelines, still subject to final review, will be proposed to the four national model codes this fall, with the hope that they will be adopted into law, said EPA's David Murane, principal author of the guidelines.

The counties targeted are those where EPA believes that new homes have more than a 20% chance of having radon levels above the EPA's longstanding "action level" of 4 picocuries of radon gas per liter of air (pCi/L).

At press time, the EPA had not yet finalized the risk

assessment map showing exactly which counties will be designated high-risk. But Murane says that roughly a third of the country, accounting for about 140,000 new homes per year, will be affected.

The guidelines specifically recommend that builders install "passive protection" systems, including gravel or some other permeable material under the slab, caulk at basement-floor perimeters, and a stack pipe from below the slab up through the attic. This passive system should also have provisions for the later addition of a fan and failure alarm.

In addition, the EPA recommends testing after the home is completed, and

installation of the fan and alarm in the "few homes that will be above 4 pCi level with the passive system installed." Who does the testing and installation is up to the builder and homeowner to negotiate, says Murane.

The EPA estimates the cost of the passive system at \$350 to \$500 per home depending on which measures the builder is already taking, such as gravel under the slab. Upgrading to the active system, where needed, could add another \$350.

At the same time that the EPA pushes the model codes, it also plans an expanded program of educational workshops aimed at generating consumer demand and interest among builders. By

showing builders "how cheap the measures are and how they can use them as a marketing tool," Murane hopes that many builders start installing the systems voluntarily before they are mandated.

The EPA estimates that household exposure to radon causes between 7,000 and 30,000 additional cancers per year in the general population, based on studies conducted on uranium miners. While nearly all public health experts agree that radon exposure does increase the risk of lung cancer, just how much and under what conditions remain controversial.

For example, Yale professor Jan A. Stolwijk, project

continued

From What We Gather

Although lumber prices are raising the cost of a new home by \$5,000 or more, most appraisers are basing their valuations on existing comps built with cheaper lumber. The result: either the builder must eat the cost or the buyer must cough up a higher downpayment. At least one federal agency, the Dept. of Veterans Affairs, is urging appraisers across the country to "be flexible."

Nails, not staples, are the preferred method for attaching all asphalt shingles, according to the Asphalt Roofing Manufacturers Assoc. (ARMA). At its last board meeting, ARMA adopted the policy in response to problems with stapling of shingles. Staples can work if installed properly, but they are prone to be overdriven, underdriven, or crooked, leading to problems, according to an ARMA technical bulletin.

A child's kidney cancer was blamed on nearby high-voltage power lines in the first U.S. lawsuit targeting electromagnetic fields as a human health risk. The suit, filed in San Diego by Michele Zuidema against San Diego Gas & Electric, said she never would have raised her daughter in the house had the power company warned her that nearby high-voltage lines

might be linked to cancer. Electromagnetic fields, or EMFs, are force fields generated by power lines, indoor wiring, computer monitors, and electrical appliances ranging from hair dryers to alarm clocks. Whether and under what conditions EMFs pose a human health risk is being hotly debated in public health circles, but research to date has been inconclusive.

You may start seeing a lot more southeastern lumber, if Atlanta-based Georgia Pacific has its way. With supplies bottlenecked in the Northwest and prices up, GP feels its extensive holdings in the Southeast will start to pay off handsomely. Factors in its favor are easily-accessible flat terrain, few old-growth tracts, 90% privately owned lands, and fast-growing "super trees."

The effects of moderate lead poisoning might be at least partly reversible, according to a new study published in *The Journal of the American Medical Assoc.* The study conducted at the Albert Einstein College of Medicine in New York City found that children's IQ scores rose as much as ten points as the level of lead in their blood was lowered with treatment. Researchers caution that the study is not definitive and needs follow up research. □

Florida Company Gives Damaged Homes a Lift

To qualify for federal flood insurance, many Floridians whose homes were damaged by Hurricane Andrew have to move up — in the air, that is. This applies to all homes in coastal areas that were more than 50% damaged by the hurricane.

Miami-based LiftPlate International, a company specializing in commercial lift-slab construction, saw an opportunity and got into the business of giving homes a lift. Rather than burrow under the slab to place lifting beams, which often mangles the site, driveway, and swimming pool in the process, LiftPlate punches two main steel beams through the house and lifts from the inside.

The trick, says company architect Peter Vanderklaauw, "is to create a grid of steel beams about 4 feet apart in each direction and bolt it down through the slab." These

beams sit on larger beams 8 or 9 feet apart, which in turn sit on the two main beams that are placed about 20 feet apart.

The steel grid is bolted to the floor slab using 1/2-inch expansion shields. "Each fastener is rated at 6,000 pounds," says Vanderklaauw, "but we're only putting about 1,000 pounds on each." A typical house has over 300 bolts.

The frame is then lifted by a dozen hydraulic jacks. It's critical, says Vanderklaauw, to lift evenly to avoid cracking of the slab and interior finishes. The company uses an elaborate system of monitors to ensure that no jack gets more than 1/16 inch out of whack with any other.

Although the feds may require a house to be only 4 or



Need a lift? Using a grid of steel beams punched through the walls, LiftPlate International raises homes — slab and all — for rebuilding safely above the flood plain.

5 feet off the ground, most customers want to go a full story so that there's usable space below the house.

Once the lift is complete, contractors build columns and a steel substructure to support the house. The whole process takes about three weeks, says Vanderklaauw, and costs \$12 per square foot for one-story designs. □

Steel Studs, continued

ling and the nail-pops that you sometimes get with wood."

Steel framing got a powerful shot in the arm last year when NAHB decided to use steel framing in its Resource Conservation House, completed in December in Bowie, Md. Steel framing will get another round of publicity when NAHB's New American Home, framed partly in steel, is unveiled at the NAHB convention in Las Vegas next year.

NAHB decided to use a stick-for-stick approach in building the Resource Conservation House — that is, using steel studs, joists, and rafters like their wood counterparts — so that the framing crew would feel more comfortable making the transition from wood to steel.

Over the longer term, however, pre-engineered systems that arrive at the site pre-cut and ready for assembly — much like an Erector Set — may become the more popular choice. Pre-engineered systems permit faster framing and less waste. Also, pre-engineered systems can generally provide better insulation values by compensating for steel's high conductivity with thermal breaks and other design techniques.

Whether stick-for-stick or pre-engineered, the biggest hurdle that steel framing has to clear is the builder's reluctance to change. With that in mind, AISI's strategy is to educate builders and promote the technology at every opportunity. An important first step in that campaign was the pub-

Steel Framing Pros and Cons

Pros

- Steel currently enjoys a 20% to 25% price advantage over lumber
- Steel is dimensionally stable, of consistent quality, and free of knots
- Steel has a higher strength-to-weight ratio than lumber and can span up to 40 feet
- With pre-engineered systems, steel permits faster framing
- Steel won't burn (some insurance companies offer fire insurance discounts for steel-framed structures)
- Steel won't rot or get eaten by pests
- The use of steel framing reduces the nation's need to harvest timberlands
- Sixty-six percent of the nation's steel is recycled from old cars and other sources — more recycled material than paper, plastic, aluminum and glass combined
- Since steel doesn't outgas like wood, it's ideal for occupants who are chemically sensitive

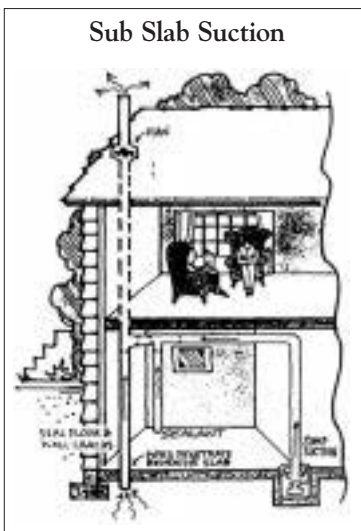
Cons

- The builder and subs have to adapt to new materials, tools, and techniques
- The builder must adapt to using screws as the primary fasteners rather than nails
- Pre-engineered systems give builders less flexibility on site
- Builders usually don't derive any net savings using steel framing on their first job or two, since they have to climb the learning curve
- Steel framing is less forgiving than wood, so foundation and framing must be level and square
- Steel is a very poor insulator; special attention must be paid to insulation details
- Steel can rust; framing members are either galvanized or "red-treated" (coated) to inhibit rust
- Producing steel is energy-intensive and can result in significant air and water pollution (a National Academy of Science study reported that it takes nine times more energy to produce a steel stud than a wood stud) — D.B.

EPA, continued

director of the Connecticut Radon Study, a six-year study of the effects of residential exposure to radon on lung cancer, says that the EPA's estimates are on "some-what shaky ground" because of the assumptions required to extrapolate from uranium mines to households. Stolwijk points out that no study to date has linked typical household exposures with cancer. The EPA radon efforts, he feels, should be more systematically directed at identifying the houses with truly high levels. Based on current data, he points out, the Canadian action level is 20 pCi/L, not 4 pCi/L as in the U.S.

The real killer, says Stolwijk, is smoking, which is implicated



EPA's new voluntary radon guidelines call for passive protection systems in all new homes in high-risk areas.

in 95% of all lung cancers. If the EPA wants to save lives, he says, it should work to "stamp out lung cancer [by banning smoking] rather than stamp out radon." □

Sears Remodeling Calls It Quits

Contractors will no longer be competing on remodeling jobs with retailing giant Sears Roebuck, which had the advantage of offering financing and extended payment plans, as well as universal name recognition. In a surprise move this spring, the ailing retailer dropped its Home Improvement Products & Services Division (HIPS), which had employed close to 3,000 full-time and 2,000 part-time workers.

Once America's leading retailer, Sears has been rapidly downsizing over the last few years in an effort to staunch the flow of red ink, and the walloping loss of \$3.93 billion in 1992 on sales of just over \$52 billion. The elimination of HIPS was part of a larger program to shed its once-legendary catalog division as well as a number of its smaller retail outlets across the country.

Much of Sears' home improvement business was in

the kitchen and bath area in conjunction with sales of cabinets from Wood-Mode, Merillat, and others. In fact, over 500 of the program's employees were full-time k&b specialists. The only remodeling program Sears plans to continue at this time is one that refaces kitchen cabinets. The program is licensed to Facelifters of Brooklyn, N.Y. under a so-called SFI agreement (one where the vendor "sells, furnishes, and installs" the product), with Sears acting as a sales agent. Any other programs it picks up will be handled the same way.

In communities where Sears dominated, independent remodelers may find they can breathe a small sigh of relief. Instead of bidding against the giant, however, some might find themselves bidding against a wide array of small remodelers cut loose from the Sears system. □

Workers Comp Book Available

If you want the latest information on workers comp laws in your state, you might want to check out *The 1993 Analysis of Workers' Compensation Laws*,

just published by NAHB. The book uses charts to pinpoint specific provisions and liabilities that apply in each state. The book costs \$20 (\$15 for members) and can be ordered from NAHB's State & Local Government Affairs Office at 800/368-5242, Ext. 361. □

TAX TALK

IRS Raises Per-Diem on Travel & Entertainment

by Milton Zall

If you or your employees travel for a conference or other legitimate business purpose, you have a choice of either keeping track of all expenses for lodging, meals, and incidental expenses (cabs, laundry, etc.), or you can forgo the record keeping and deduct costs on a per-diem basis.

If you choose the per-diem (daily) route, the IRS allows you to write off the federal per-diem rate for the locality of your travel. For your employees, the IRS will accept the federal per-diem rate, or your own per-diem rate, whichever is less. The same logic holds if you pay your employees a per-diem rate only for meals and incidental expenses (no lodging).

The new rates are \$150 per day for high-cost locations and \$94 for all others. High-cost locations include: Los Angeles, Calif.; Aspen and Vail, Colo.; Washington, D.C. and vicinity; Key West, Fla.; Chicago, Ill.; Ocean City, Md.; Boston, Cambridge, and

Lowell, Mass.; Atlantic City, N.J.; New York City and White Plains, N.Y.; Philadelphia, Pa.; and Newport, R.I.

The daily rate for meals and incidentals only (no lodging) range from \$26 to \$38 depending on where you travel. Your local IRS office can tell you which rate applies to which city.

One further note: The 80% limit on deductions for meals and incidentals applies to per-diem rates too. If your allowance is lower than the feds', you must count 40% as meals and incidentals, and can deduct only 80% of that portion. If you use the federal rates, the meals and incidentals portion is \$36 a day for high-cost localities and \$28 a day for the rest. The new IRS rules are effective as of March 11, 1993.

Have a question about your tax returns? Starting this year, IRS telephone assistants have on-line computer access to your account data, regardless of where you originally filed the return.

The IRS has also expanded the authority of its telephone assistants to make changes to account files. Some things — such as penalty abatements and address changes — can now be completed by phone.

For example, if a man who filed in Pennsylvania and later moved to Texas gets a penalty notice forwarded to him, he can call the IRS in Texas to report his change of address and find out if he qualifies to have the penalty abated. Or if he needs the amount of mortgage interest he's deducted for the last two years, it's readily available.

One-stop account services will continue to grow as the IRS replaces obsolete computer terminals under its Tax Systems Modernization program. This will give local IRS offices that offer walk-in help the same capability as the toll-free telephone sites to use the improved system. □

Milton Zall writes on tax and business matters from Silver Spring, Md.